National University of Computer and Emerging Sciences



Lab Manual

for

Programming Fundamentals

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| Section | BDS-1D |
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## Objectives

After performing this lab, students will be able to:

* Write C++ Code for the problems involving ‘Nested Loops’.

## Instructions

## For each problem, your filename should be “q Number”.cpp. e.g For Problem 1, create “q1.cpp”.

## Zip all files in a folder and your submission zip filename must be your rollno. e.g “21L1234.zip”. Note your zip file shall contain all the .cpp files for the problems you solved.

## Submit the zip folder on Google classroom.

## Plagiarism is strictly prohibited.

## Good Luck.

## Problems

**Write C++ Code of the following Problems using For Loop.**

**Problem#1**

Write a program to produce a square matrix with 0's down the main diagonal, 1's in the entries just above and below the main diagonal, 2's above and below that, etc..

|  |  |
| --- | --- |
| Input | **Output** |
| **Enter the a number: 4** | **0 1 2 3**  **1 0 1 2**  **2 1 0 1**  **3 2 1 0** |

**Problem#2**

Write a program that asks the user to enter a number and the character for pattern and displays the following pattern.

|  |  |
| --- | --- |
| Input | **Output** |
| **Enter the a number: 4**  **Enter the character for pattern: #** | **#**  **# #**  **# # #**  **# # # #**  **# # #**  **# #**  **#** |

**Problem#3**

Write a program that prints prime factors of a number.

|  |  |
| --- | --- |
| Input | **Output** |
| Enter a number: 100 | **Prime factors of 100 are:**  **2**  **5** |

**Problem#4**

Write a program that asks user to input a number and prints the following pattern .

|  |  |
| --- | --- |
| Input | **Output** |
| Enter a number: 4 | **2**  **44**  **666**  **8888** |

**Problem#5**

Write a program that takes a number from user and tells the frequency of each digit in that number.

|  |  |
| --- | --- |
| Input | **Output** |
| Enter a number: 675343071 | **Frequency of 0= 1**  **Frequency of 1= 1**  **Frequency of 2= 0**  **Frequency of 3= 2**  **Frequency of 4 =1**  **Frequency of 5 =1**  **Frequency of 6=1**  **Frequency of 7 =2**  **Frequency of 8 =0**  **Frequency of 9 =0** |